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**May 3rd 2010 ~ Monday Morning Minutes:**

# Sump and Sewage Pump Minimum Submergence by Norm Hall

We now begin a Monday Morning discussion about pumps, controls, and sumps. This article addresses a basic, but important question, which comes up often when setting the level controls in a sump, "How low should the pump-off float switch be set?"

In our basements, we often have a float mounted on the sump pump which activates the pump at about 10" level and shuts it down at about 3" level. These low levels are fine with small single phase residential pumps. Commercial projects require a bit more thought.



The safest way to know the minimum water level is to read the installation, operation, and maintenance manual (IOM). The IOM also provides important safety considerations to keep the installer and operator safe from harm.

When the engineer is designing the project he or she may not know what brand they will end up with, after bids. The minimum water level is required to assist in the sump sizing. Many of the ITT Bell and Gossett sump and sewage pumps can operate with the low level about 6" below the top of the pump motor. Explosion proof pumps must have the motor fully submerged. In fact, any time the pump may be called to operate continuously; it is recommended that the motor be completely submerged. Based on these comments, we assembled the following selection guidelines. Once the pump model is selected, it is best to call us and ask what the factory recommends for minimum submergence. Contractors should ALWAYS check the IOM and follow the manufacturer's recommendations.

**Rule of thumb table for minimum level in sumps (Not explosion proof).**

| Pump Size | HP Range | Pump-Off Level |
|---|---|---|
| 1-1/2" | 1/4 to 3/4 | 12" |
| 2" | 1/3 to 1-1/2 | 20" |
| 3" | 1-1/2 to 7-1/2 | 30" |
| 4" | 1-1/2 to 20 | 42" |
| 4" | 25 to 40 | 50" |



Always check exact manufacturer requirements before setting the minimum level.
Next week we will examine float systems.